

Sizing up for safety

by Ken Roy

Not the typical classroom

Science laboratories are among the most unusual classrooms inside a school because they can be potentially dangerous places to work or learn. There is a multitude of hazards, including harmful chemicals and biological elements, dangerous equipment, and fragile glassware. This is the reason middle school science labs are designed with engineering controls, have safety operating procedures, and require appropriate personal protective equipment. Why, then, is the occupancy load or number of people legally allowed to work in the lab either intentionally overlooked or ignored in many schools? Such noncompliance puts not only the administration at risk legally, but also the science teacher, should there be a safety incident in an overcrowded lab. If a teacher knows the lab is unsafe because of overcrowding and blatantly disregards both legal standards and professional best practices, this could be construed as reckless behavior, which could lead the teacher and the administration down the road toward a negligence lawsuit.

Strategies for size

What can a science teacher do to address the issue of occupancy load? Consider the following list of both legal and quasi-legal strategies:

OSHA legal standards for lab safety:

As an employee, the science teacher has the right to a safe workplace. Under the Occupational Safety and Health Act of 1970, employers must “provide a workplace free from serious recognized hazards

and comply with standards, rules and regulations issued under the OSHA Act.” In addition, they must “examine workplace conditions to make sure they conform to applicable OSHA standards” (OSHA). For science teachers, the Laboratory Standard (29 CFR 1910.1450) and the Hazard Communication Standard (29 CFR 1910.1200) are the most relevant. Remember, OSHA has no jurisdiction over students. But student numbers and behaviors in the science lab can make for an unsafe working environment for the teacher resulting from overcrowding. If teachers have an issue, they should work with their administration first and involve a union steward. If necessary, the union can contact OSHA, though teachers can contact OSHA, as well (complaints or concerns should be in writing).

Fire codes: Laboratories under the National Fire Protection Association Life Safety Codes and the International Fire Code have established occupancy load limits. The load codes do not dictate the number of students that a lab can be built for but do prescribe the number of occupants who can safely exit the lab. In most school districts, the local fire marshal is the “authority of jurisdiction” over the district in these matters—not the science supervisor, the principal, or the superintendent of schools. As in auditoriums and gyms, occupancy signs should be posted in labs. The local fire marshal has jurisdiction in most states even over teachers’ contracts, which establish class size. Administrators cannot legally add more desks to fit in more students (if it exceeds the



designated safety limit). If in doubt, have the authority of jurisdiction help determine the laboratory occupancy load. This should be addressed prior to lab work (via the administration and union).

Building codes: In designing science labs, occupancy-load factors must be addressed under the International Code Council or other regional code administrator associations. Teachers can check with local building officials or original building prints to determine the occupancy loads. The union or a teacher can contact a local building official for an inspection. The official takes it from there, letting the district know if it is in violation and how to rectify issues.

Professional standards/best practices: Although quasi-legal, professional best practices are now given almost equal weight as legal standards in the courts. Science teachers should check NSTA's website for position papers dealing with safety (www.nsta.org/about/positions.aspx). NSTA recommends that labs have a maximum of 24 students, providing the occupancy load can accommodate that number. Remember, the occupancy load depends on the size of the lab, number of exits, hazards, and more, relative to the fire and building codes. The NSTA position papers that address occupancy loads include Liability of Science Educators for Laboratory Safety (www.nsta.org/about/positions/liability.aspx), and Safety and School Science Instruction (www.nsta.org/about/positions/safety.aspx). These documents should be given to all in the chain of authority in the school and district offices.

"Duty of care" legal requirement: As a professional, the science teacher also has what is known legally as "duty of care." The teacher must secure a safe instructional environment for students and other employees. Teachers and administrators have liability issues if certain types of experiments (e.g., involving use of hazardous chemicals, flammables, or projectiles) are conducted in a lab that they know is over the occupancy load. Until the occupancy-load issue is addressed, the teacher should eliminate any activity that could be unsafe. The teacher needs to notify supervisors that the lab is unsafe; required labs must be temporarily suspended until the safety concerns are addressed.

The principle of sovereign immunity: This legal doctrine holds that states and towns are usually immune

from being sued, which is why most lawsuits involving injuries to students name the individual teacher as one of the defendants. A state indemnification act then requires the state or town to indemnify or hold harmless the teacher, to pay for the teacher's defense, and to pay any monetary damages. Significantly, indemnification only applies to acts of simple or ordinary negligence, not reckless or willful misconduct. If the teacher's conduct is deemed willful or reckless, then the state or town may not be required to pay for the defense or the resulting money damages. Knowing the safety rules (including appropriate occupancy-load factors) and blatantly disregarding them could be construed as reckless behavior.

Teacher as safety expert: One interesting change in courts decisions is who determines if a lab is unsafe. It used to be administrators. Today, courts seem to be charging science teachers with that decision, based on their expertise and experiences working in the laboratory environment.

School insurer: The school's insurance carrier can also be effective in dealing with the issue of exceeding the occupancy load of a science lab. The company can be contacted for the purpose of requesting a safety inspection for science laboratories.

Teacher awareness

In order to avoid safety issues, some labs are coded and built as regular classrooms. Teachers need to be educated about what is required (engineering controls, standard operating procedures, and personal protection equipment) for lab work. If students are asked to do hands-on work in a regular classroom, no activities that require engineering controls such as ventilation and eyewash can be conducted. If such activities are conducted and someone gets hurt, both the teacher and the district share liability. If teachers feel the lab or activity is unsafe, they have a legal responsibility under duty of care to make it known to the administration and hold off doing the activities.

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Occupancy load is a critical factor in helping to make science labs safer. Science teachers should never ignore this fact and work with the administration to meet the code or standard of law. ■

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Reference

Occupational Safety and Health Administration. Employer responsibilities—www.osha.gov/as/opa/worker/employer-responsibility.html

Resource

NSTA position papers—www.nsta.org/about/positions.aspx

Question of the month

Should I know first-aid procedures in case one of my students has an accident in the lab?

Answer

Absolutely! You cannot wait for the nurse to respond when seconds count. Science supervisors should schedule one department meeting per year to have the school nurse come in and talk to science teachers about first-aid procedures and the district policy. Science teachers might also want to look into formal first-aid certification.

Do you have a safety question?

Submit questions relative to safety in the middle school science laboratory to Ken Roy at Royk@glastonburyus.org.

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